



Ann and H.J. Smead Aerospace Engineering Sciences



University of Colorado **Boulder**



SMEAD AEROSPACE ENGINEERING SCIENCES

The Ann and H.J. Smead Department of Aerospace Engineering Sciences is a hub for our nation's aerospace education and research efforts. Our students and faculty are advancing the frontiers of aerospace engineering and space science. From designing autonomous systems to expanding humanity's presence into deep space, our students build their technical expertise and creativity to solve tomorrow's challenges.



60+ Faculty

1,700+ Students



10 AIAA Fellows

9 National Academies Members

INCLUSIVITY AT SMEAD AEROSPACE

Smead Aerospace Engineering Sciences fosters an environment of inclusivity and celebrates the ever-increasing diversity of our student body. Whatever your background, our department will provide you with the support necessary for academic and professional success, while keeping our minds open to how we can further improve our scholastic environment.

#1

Public university
for NASA
research funds

OVER
\$37 MILLION

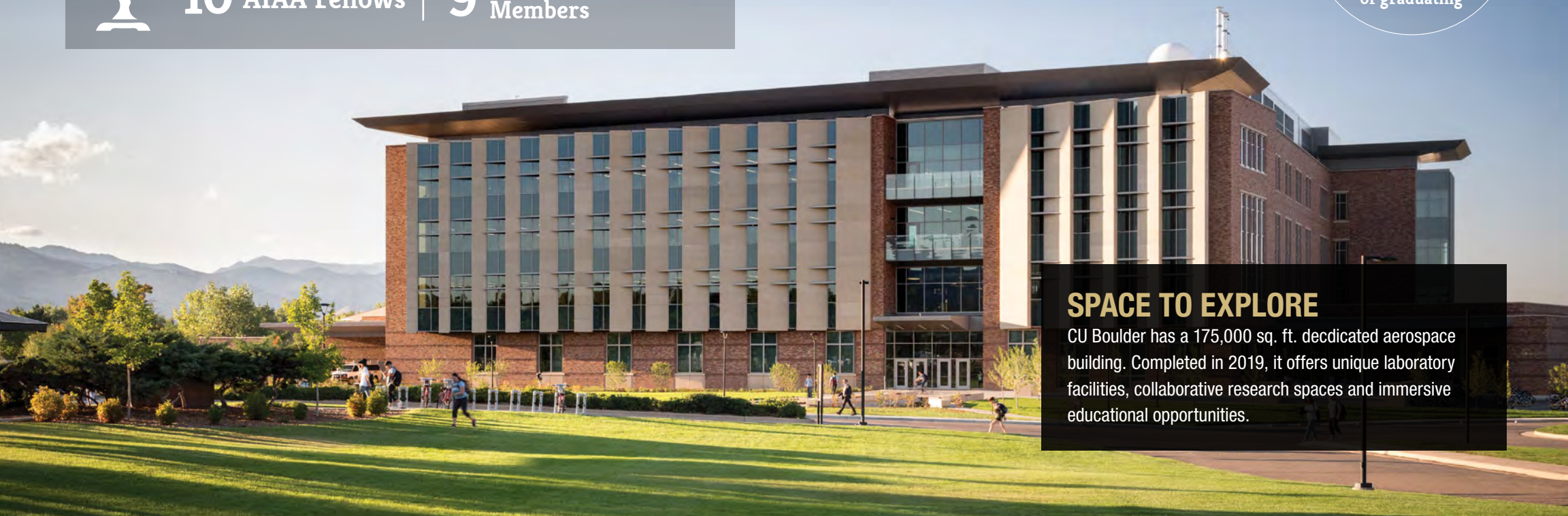
in research awards
in 2025

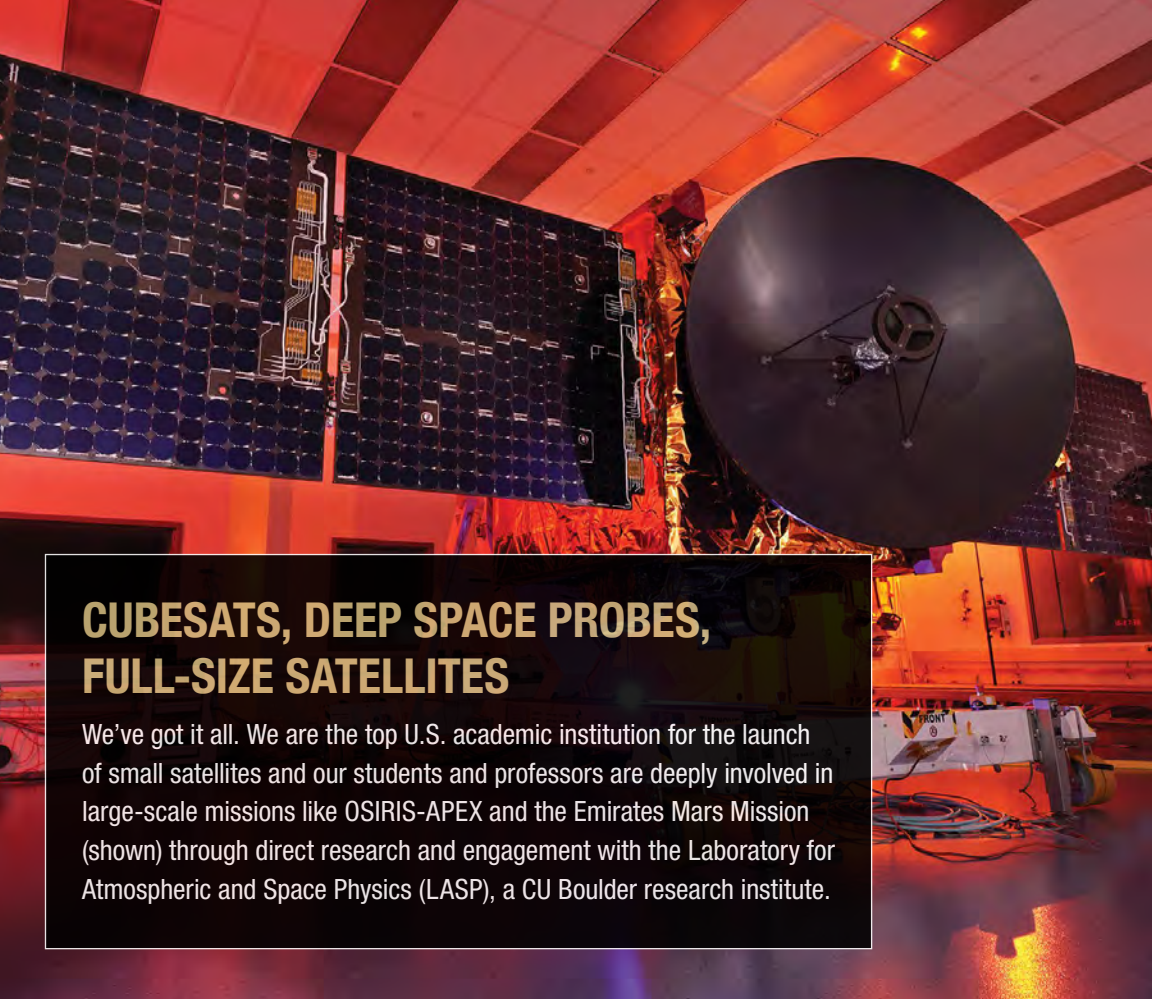
>95%

of students have job or
research offers within
six months
of graduating

SPACE TO EXPLORE

CU Boulder has a 175,000 sq. ft. dedicated aerospace building. Completed in 2019, it offers unique laboratory facilities, collaborative research spaces and immersive educational opportunities.





CUBESATS, DEEP SPACE PROBES, FULL-SIZE SATELLITES

We've got it all. We are the top U.S. academic institution for the launch of small satellites and our students and professors are deeply involved in large-scale missions like OSIRIS-APEX and the Emirates Mars Mission (shown) through direct research and engagement with the Laboratory for Atmospheric and Space Physics (LASP), a CU Boulder research institute.



RESEARCH FOCUS AREAS

Our centers and institutes are pushing scientific and engineering boundaries, creating innovative technologies and capabilities, and exploring new frontiers in space and on Earth. Recent projects include:

Astrodynamics & Satellite Navigation Systems (ASN)

Investigating orbital motion of spacecraft, interplanetary mission design, attitude control, and navigation utilizing advanced sensors and technology.

» Space Tracking and Autonomy

Leading a \$5 million U.S. Air Force grant to improve orbital awareness and safe autonomous activity for spacecraft in high Earth orbits and around the Moon.

» MAXWELL CubeSat

A nanosatellite project being developed by our students to demonstrate high-rate communications with NASA's Near-Earth Network.

Autonomous Systems (AUT)

Incorporating interdisciplinary knowledge in robotics, human-robot interaction, artificial intelligence, and uncrewed systems for subterranean, underwater, ground, and aerospace applications.

» Exploring Supercell Thunderstorms with Drones

We're studying severe storms and tornadoes using uncrewed aerial systems (UAS) to improve advanced warning systems for the public and to enhance autonomous vehicle research.

» Collaborative Analyst-Machine Perception for Robust Data Fusion (CAMP)

Developing new fusion algorithms and interfaces to allow communication with automated machine learning systems via natural language chat, direct manipulation, and hand-drawn sketches.

Bioastronautics (BIO)

Encompasses biological, behavioral and medical research for safe and efficient exploration of space by humans and biological science in microgravity. Our work is closely aligned with NASA Programs and FAA Commercial Space Transportation goals.

» Space Station Hardware

Designing experimental and operational hardware for the International Space Station, like the Space Automated Bioproduct Lab microbe incubator and custom refrigerators for the ISS crew galley. Since 2024, we've launched 35 major crew-operated payloads.

» Artificial Gravity as a Countermeasure to Spaceflight Physiological Deconditioning

Investigating human centrifuge options for mitigating bone loss and muscle weakening on long term space missions.

Fluids, Structures and Materials (FSM)

We are pushing the frontiers of composites, multifunctional materials, and hypersonics through advanced atomic level modeling, simulation, and optimization.

» Advanced Computational Center for Entry System Simulation (ACCESS)

A \$15 million NASA institute led by CU Boulder to significantly advance computer simulations to design and ensure safe atmospheric entry systems for space exploration.

» Boosting Aerodynamic Performance for Hypersonic Vehicles

Leading a multi-university initiative conducting fundamental and experimental quantum materials research to mitigate turbulence and heat on hypersonic aircraft.

Remote Sensing, Earth and Space Sciences (RESS)

Bridging the gap between science and engineering, developing advanced technology and sensors to explore Earth from space, and space from Earth.

» Geospace Data Science

Advancing the science and engineering of forecasting near-Earth orbital environments through numerical space weather prediction systems that assimilate large volumes of remote sensing and in-situ observations.

» Lidar Exploration

Studying advanced spectroscopy principles, developing new lidar technologies, investigating fundamental physical and chemical processes governing the whole atmosphere, and making new discoveries in atmosphere-to-space sciences.



**36 PATENTS ISSUED
OVER THE LAST TEN YEARS**





INDUSTRY PARTNERS

More than 125 companies have partnered with our faculty on research, ranging from startups to large firms, including BAE Systems and Lockheed Martin.

UNDERGRADUATE STUDENTS

The University of Colorado Boulder is internationally recognized for its education leadership in aerospace engineering and Earth and space sciences, with world-class faculty and exceptional, engaged students.

We focus education and research programs on both the science and engineering of aerospace, using experiential learning from day one. Combine this with intensive faculty and staff advising, and our graduates are broadly educated, interdisciplinary, agile, and ready to hit the ground running in their careers.

Whether your interests lie in joining a business or a federal agency, leading a research laboratory and teaching the next generation, starting your own company, or becoming an astronaut, CU Boulder will help you achieve your aerospace career goals.



CAPSTONE PROJECTS

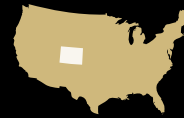
As a part of our hands-on curriculum, we work directly with companies and aerospace industry leaders on projects that can make a real impact and prepare our senior and graduate students for the workforce.

INVOLVEMENT OPPORTUNITIES

As an aerospace student, you will have access to a wide variety of clubs and organizations. From engineering and aerospace-specific groups to organizations centered on hobbies and the outdoors, you have a place at CU Boulder.

The College of Engineering and Applied Science is also home to nine affinity-based professional engineering societies supported through the Campos Student Center.

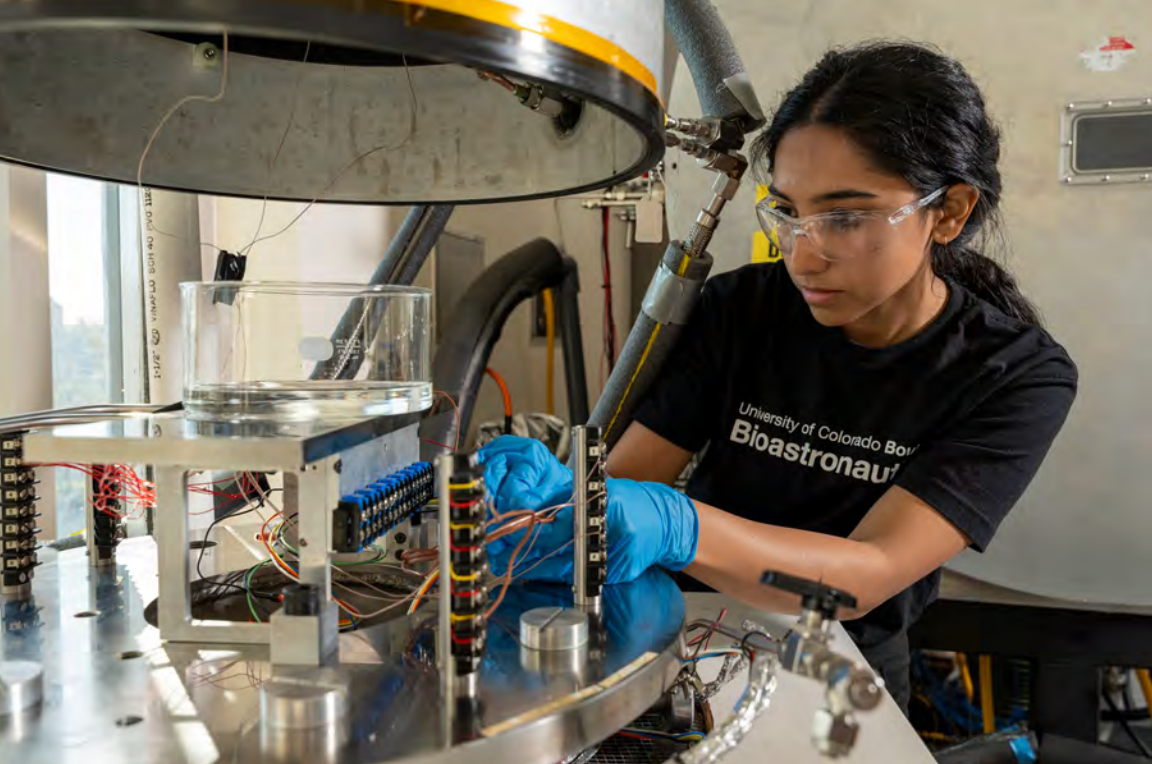
Campos Student Center scholarship programs and student societies are open to all undergraduate engineering students and provide meaningful engagement and opportunities for students, alumni and industry partners.



#1

STATE PER CAPITA FOR AEROSPACE EMPLOYMENT





GRADUATE STUDENTS

Our graduates become leaders and entrepreneurs in aerospace, groundbreaking researchers, technical experts in industry and government labs, and educators and mentors for future generations inspired by flight and space exploration.

Focus areas

- » Astrodynamics and Satellite Navigation Systems
- » Autonomous Systems
- » Bioastronautics
- » Fluids, Structures and Materials
- » Remote Sensing, Earth and Space Sciences

Graduate degrees

- » **PhD**
- » **MS**
- » **Professional MS** – Designed for working professionals
- » **BAM** – Bachelor's-Accelerated-Master's
- » **MS/ME** - Dual Graduate Degree in Aerospace & Business
- » **MD/MS** – Medical Doctorate & Master of Aerospace (partnership with the CU Anschutz School of Medicine)

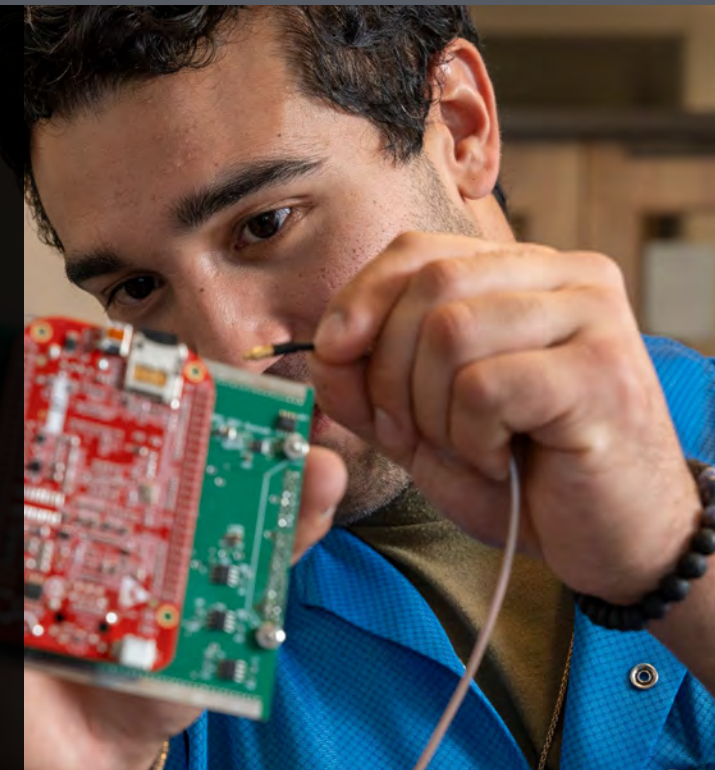
TOP 10 NATIONALLY-RANKED GRADUATE AND UNDERGRADUATE PROGRAMS



STUDENT EXCELLENCE

Student awards are from the most recent five years.

- » 25 NSF Graduate Research Fellows
- » 16 NASA Fellows
- » 13 NDSEG Fellows
- » 10 Brooke Owens Fellows
- » 9 Draper Fellows
- » 4 Aviation Week 20 Twenties Awardees





THE SMEAD PROGRAM

The Smead Program ensures the department attracts and retains the brightest minds in aerospace. It brings together graduate students, faculty, post-doctoral scholars, and visiting professors to conduct groundbreaking, interdisciplinary research in an enriched environment.

Smead Scholars

Two aerospace PhD applicants are chosen annually for this prestigious program, which provides full first-year tuition coverage, a research stipend, travel allowance, programming, and dedicated staff support. Being a Smead Scholar is a journey of pushing boundaries and building character to become a future leader of the field. Smead Scholars are nationally-recognized for their research and character, with alumni spanning the nation, both geographically and across the aerospace sector. If you are interested in being considered for this program, learn more at colorado.edu/aerospace/smead.

Faculty Fellows

Chosen for their outstanding research records and mentorship qualities, Smead Faculty Fellows serve for terms of two to four years. The program supports both groundbreaking science and the student Smead Scholars, as Fellows often serve as research advisors.

Visiting Professorship

The Michael M. Byram Distinguished Visiting Professorship welcomes an internationally-renowned researcher for one to two semesters each year to teach classes, host seminars, and collaborate with faculty.

Distinguished Post-Doctoral Associate

This one-year research position recognizes extraordinary academic achievement in advancing the knowledge and study of aerospace engineering sciences.



“We have leadership seminars, a yearly symposium, travel support, and opportunities to connect with industry leaders. The Smead Scholars program is incredible. It’s a great balance of academic and professional development.”

Dezell Turner
Smead Scholar





University of Colorado Boulder

Ann and H.J. Smead Aerospace Engineering Sciences
3775 Discovery Drive
Boulder, CO 80303-0422

NON-PROFIT ORG
US POSTAGE
PAID
BOULDER, CO
PERMIT NO. 156



Stay connected!

@CUEngineering    

303-735-4900

colorado.edu/aerospace

The University of Colorado is an equal opportunity/nondiscrimination institution. The information in this brochure was accurate at the time of printing (January 2026).

All information is subject to change without notice.